1.0 PHASE III ACCREDITATION SUPPORT PACKAGE DESCRIPTION

Phase III accreditation support is comprised of two distinct activities: detailed code verification and validation at the functional element (FE) and overall model levels. Validation is accomplished through assessments based upon comparisons between FE and/or model predictions with real world data from a variety of sources (e.g., developmental, operational, laboratory, and/or bench testing, scientific and technical intelligence (S&TI) or foreign material exploitation (FME) reports, etc.) Each of these activities is described in greater detail below.

1.1 CODE VERIFICATION

The purpose of code verification is to provide a detailed examination of the physical code. This is usually accomplished by looking at individual modules until the model or simulation has been examined in its entirety. The main objective of this task is to ensure that design requirements have been satisfied and that the algorithms and equations being used are properly implemented in the code. A second objective is to ensure that appropriate coding practices are being used and that the software can actually be executed as implemented.

Code verification consists of four major elements:

a. correlating design requirements with cited references;

b. correlating code implementation with the design specifications;

c. code auditing for correctness of implementation; and

d. testing of all executable statements.

Detailed descriptions of each element can be found in the SMART VV&CM Process document [1].

The verification results presented in Section 2.0 provide the prospective model user with a determination of how accurately the model's code implementation represents the conceptual description specified by the developer, as well as an assessment of how closely the model code follows the design specifications. It contains a summary of verification activities on this model up to the present time, a description of the verification methodology employed, a summary of verification findings, listings of deficiencies discovered during verification efforts, and an assessment of the impact of these findings on model use.

Code verification results are presented in Section 2.0 for the FEs listed in the 2.0 VER column of Table i-1.

1.2 VALIDATION WITH TEST DATA

Validation procedures will vary from simple to complex in accordance with the function or phenomena being simulated (validated) and the ease with which the phenomena tested can be represented by the model. At the FE level, bench test data in the form of characteristic response curves and single point measurements can often be used to assess the

representation of a function (e.g., a servo) in the model. At the model level, several or all of the functions are usually exercised in an attempt to predict data that was collected from an operational test. Comparisons of these predictions with actual measurements usually leads to statistical goodness of fit or correlation values that are used to assess the validity of the model or the function for the type of situation or scenario during which the data were collected.

Validation results provided in Section 3.0 are descriptions and results of assessments that have been applied to functional elements of the model. These consist of correlation and comparison statistics derived from test data measurements and FE predictions. The section is subdivided into FE and test data descriptions, assessment plans, results, and conclusions.

Results of validation assessments at the model level are presented in Section 4.0 and address the set of Critical Analytical Issues (CAIs) normally associated with the model. A set of Measures of Effectiveness (MOEs) are identified for each CAI to guide and support the assessment performed and the conclusions formulated from that assessment. These conclusions form the basis for recommendations for further investigation of any new issues discovered during the assessment, as well as a statement of the credibility of the model in its current configuration. The validation results in Section 3.0 and 4.0 are classified and will be available as a classified supplement with the next ASP update.